Complications of Catheterisation Procedures in Children With Pulmonary Hypertension: A 10 year Single institution Experience

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Introduction
Right heart catheterisation, is considered the gold standard for diagnosing and grading severity of pulmonary hypertension. We sought to describe the frequency of complications associated with catheter procedures in children with pulmonary hypertension at our institution and to identify possible predictors of serious adverse events.

Methods
A retrospective case note review of consecutive catheter procedures was performed in children with pulmonary hypertension between November 1990 and December 2010. Data were collected on diagnostic group, associated intracardiac shunts, WHO functional class and medications. Outcomes included; unplanned intensive care admission, arrhythmia requiring intervention, need for cardiopulmonary resuscitation (CPR), and death within 24 hours.

Results
204 catheter procedures were performed in 149 children. Mean age at catheterisation was 8.4 years (range 0.1– 19 years). Diagnosis was idiopathic in 57 (38%), associated with CHD in 56 (38%), lung disease in 8 (5%) and other causes in 28.
There were 51 (25%) interventional procedures (of which 41 had atrial septostomy, which was combined with Hickman line insertion in 10). The remaining 153 (75%) were diagnostic catheters (of which 21 were combined with Hickman line insertion). 29 (14%) were considered urgent procedures the remaining 175 (86%) were elective.
At catheterisation patients had significantly elevated mean pulmonary artery pressure, mean 50 mmHg (SD 20); and pulmonary vascular resistance, mean 18 WU.m2 (SD 14.2).
There were a total of 19 adverse events in 11 patients resulting in an overall risk of any adverse event of 5.4 %. 5 patients experienced arrhythmia requiring intervention, 5 required CPR which returned spontaneous circulation in 2 patients. 8 patients had unplanned ITU admission.
3 patients died (overall mortality 1.47%); one following BAS, one with PVOD and loss of output on induction of anaesthesia and the third with pulmonary hypertensive crisis post procedure.
Of the 51 patients who had interventional catheters 7 (13.7%) experienced complications, compared with 4 (2.6%) complications in the 153 patients who had diagnostic catheters

Conclusions
In experienced centers, right heart catheter procedures in patients with pulmonary hypertension are associated with low morbidity and mortality rates. Interventional catheters are likely to represent an incremental risk.